



Marine Debris Citizen Science Program



John D. MacArthur Beach State Park

What is Marine Debris?

Definition: *“any man-made object discarded, disposed of, or abandoned that enters the coastal or marine environment”*

- National Oceanic and Atmospheric Administration (NOAA)



What Does Marine Debris Look Like?



Marine Debris can be floating in the ocean or washed up on the beach.



Where is Marine Debris Found?

Manila, Philippines



Hawaii, USA



Dorset Coast, UK



Alaska, USA



Marine Debris is not just in one place, it is all over the world.



Who/What is Marine Debris Harmful To?



Marine debris can be very dangerous - threatening our oceans and coasts, endangering marine animals and seabirds! It can affect their well-being and even our own health and safety.

It also takes away from the beauty of our natural environment.

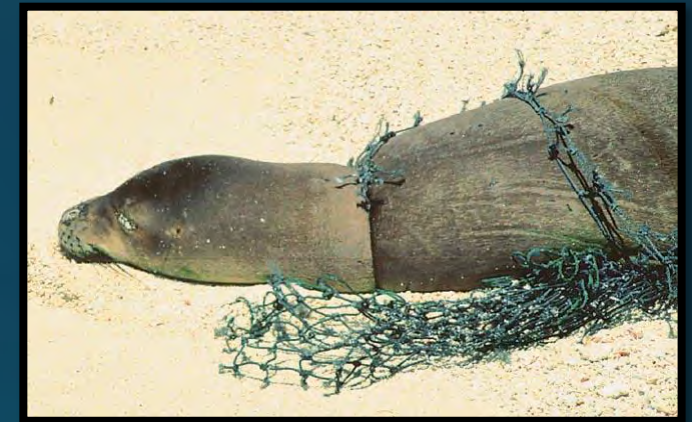


Issues for Marine Life: Entanglement

How does marine debris affect wildlife in the ocean?

One issue is entanglement.

These are all examples of how this marine debris can entangle animals, making them unable to swim, fly, eat or breathe – ultimately bringing them to their death.



Issues for Marine Life: Ingestion



Marine life sometimes can't tell the difference between jellyfish and plastic bags – can you?

Another issue of marine debris is ingestion.

Animals are eating plastics and other debris thinking that it is on their natural food chain.

This causes huge issues for their digestive tracts.

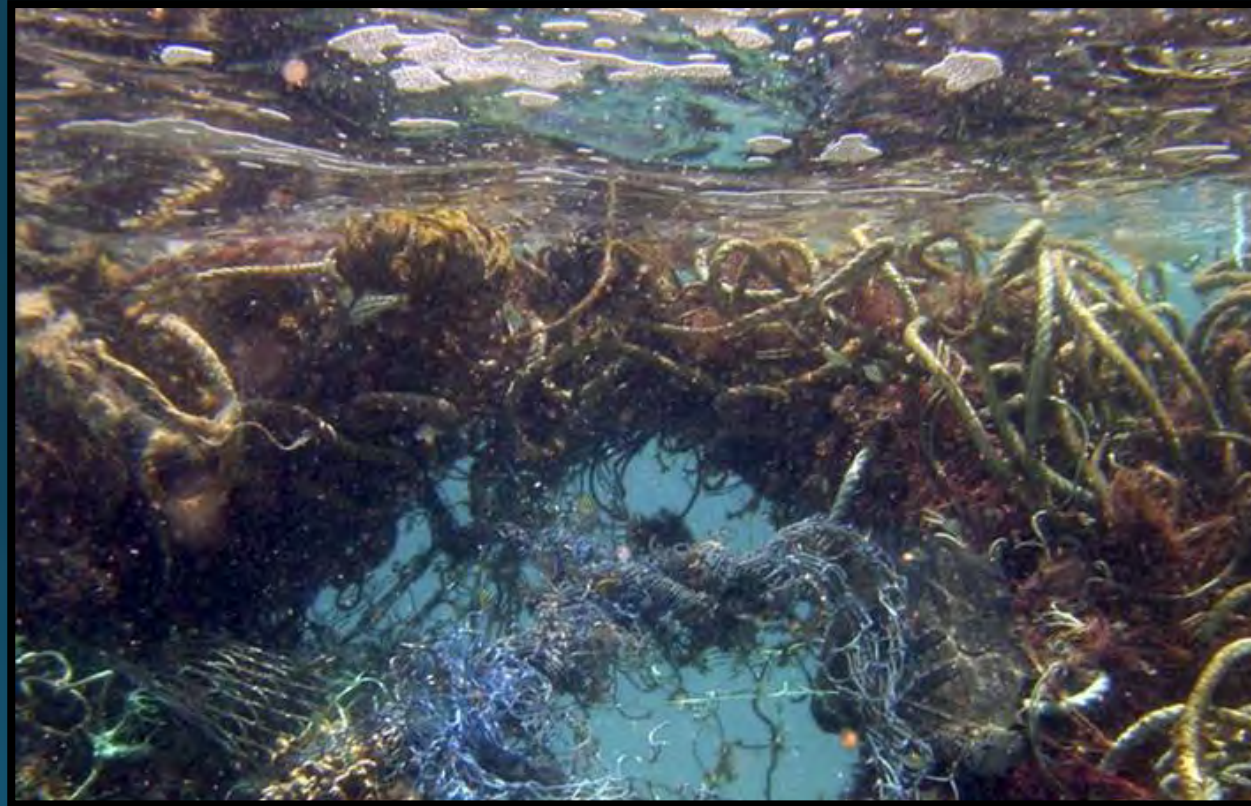


Seabird stomach filled with plastic



Issues for Marine Life: Blocking the Sun

Marine debris can prevent algae and plankton, the photosynthetic producers in the ocean from receiving enough sunlight to create nutrients.



When these plants are threatened, the entire food web is put at risk.



Great Pacific Garbage Patch

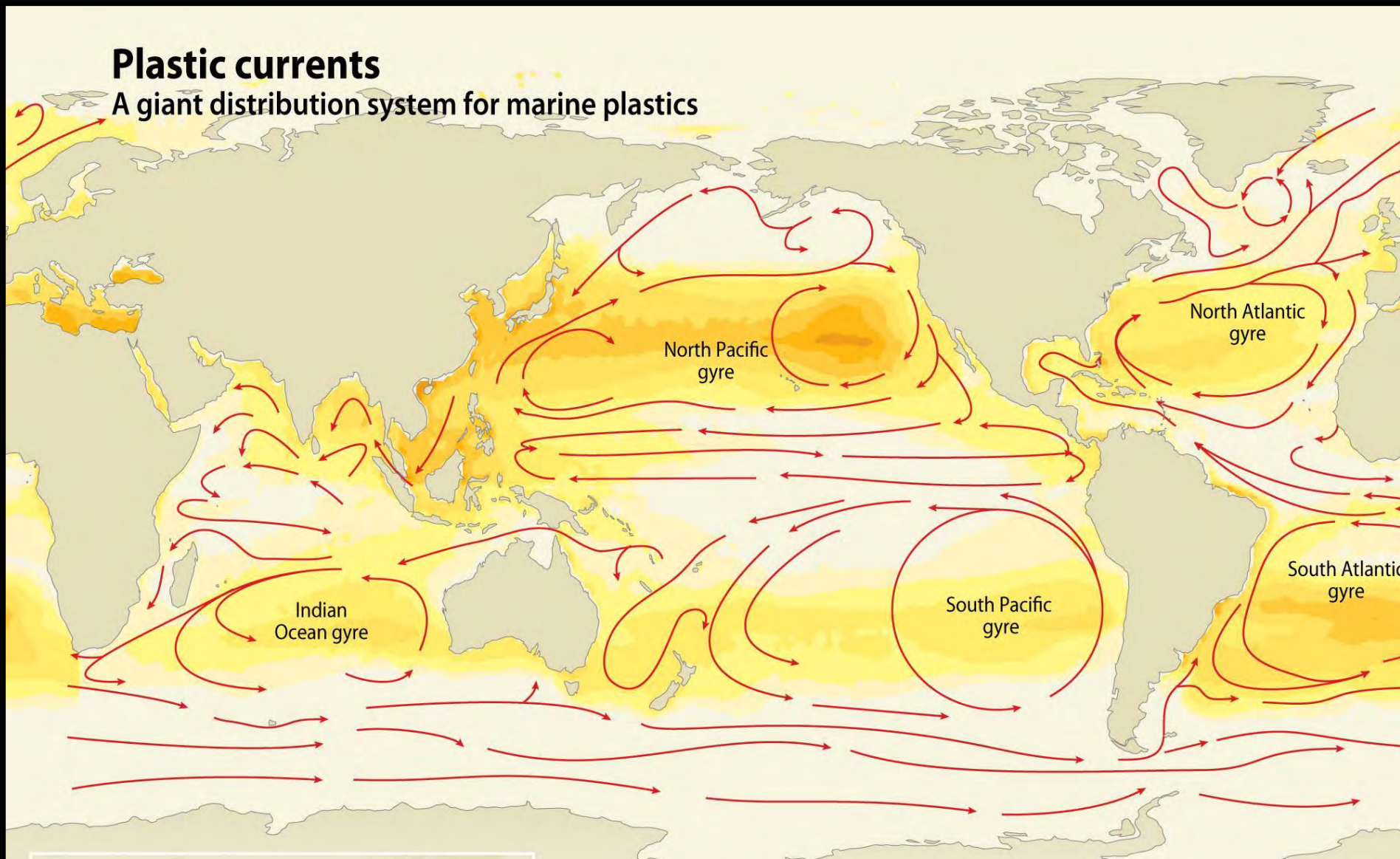


The “Great Pacific Garbage Patch” is a collection of marine debris in the North Pacific Ocean.

But, this is not the only area that is having this problem.



“Gyres” form with ocean currents, collecting marine debris into different areas around the world, making many “garbage patches”.



Plastics



Most debris in these Garbage Patches is plastic. Plastic is not biodegradable, meaning it does not disintegrate—it simply breaks into tinier and tinier pieces, known as microplastics.



What are Microplastics?



Microplastics are small pieces of plastic, less than 5 millimeters long.



Where Do Microplastics Come From?

1. Nurdles: pre-production pellets used to manufacture plastic items
2. Plastic that degrades and gets broken into smaller and smaller pieces



Why Do Microplastics Matter?

- Microplastics are now abundant in the ocean and will never biodegrade
- Chemicals in the water can adhere to microplastics
- Chemicals that plastics are made of can leach out into the ocean
- Microplastics are ingested by marine and aquatic life
- There are many any impacts which are still unknown



	zero month	one month	three month	six month	nine month	twelve month
HDPE						
LDPE						
PP						
PET						
PVC						



Where Does Marine Debris come From?

The Land and The Sea



Land-Based Sources: Individuals



Marine debris from land-based sources washes, blows, or is released into the water from coastal or inland areas.

Individuals can leave trash or toss it into the water. Further inland, people lose or throw trash on the streets or improperly manage their waste and garbage bins.



The inland actions can lead to trash in storm drains, rivers, and other waterways. Once in these waterways, the trash can be carried to our oceans.



Land-Based Sources: Facilities + Construction Sites

Industrial and manufacturing facilities like construction and demolition sites can also contribute to the marine debris issue.

During transport of their materials and trash disposal, may be improperly managed and end up in the ocean.



Ocean-Based Sources of Marine Debris



Marine Debris can also come from the Sea on shipping vessels, fishing vessels, and cruise liners

Improperly securing or mishandling equipment can lead to materials being swept, blown, or thrown overboard.



What Can YOU Do?

- Reduce, Reuse, and Recycle
- Use Resuable Water Bottles and Bags
- Participate in beach clean-ups and look closely for microplastics
- Come to MacArthur Beach State Park and become a Citizen Scientist! Collect Marine Debris and then contribute to our data collection



Come to MacBeach and Help Clean It Up!

It's as Easy as 1, 2, 3!

Step 1

Pick up your Marine Debris Kit at front desk in the Nature Center.

It includes:

- Gloves
- Bucket for Recyclables
- Bucket for Non-Recyclables



Step 2

Go to the Beach and pick up marine debris.



Step 3

- Return to the Weigh Station outside of the Nature Center
- Weigh your marine debris
- Return the Kit
- Ask the Nature Center docent to record your data



Only Pick Up Marine Debris, Not Nature!



Remember:
We don't want to
collect the natural
seaweed or anything
else that belongs on
the beach.

This is the wrack line,
made out of seaweed
and other natural
materials, like shells.

Keep those items on
the beach.



Help MacBeach Clean Up Marine Debris!



Before



After

